NASA'S MISSION TO PLANET EARTH

EARTH PROBES

DATA INFORMATION SYSTEM
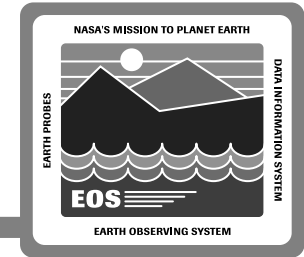
EOS

EARTH OBSERVING SYSTEM

Operations
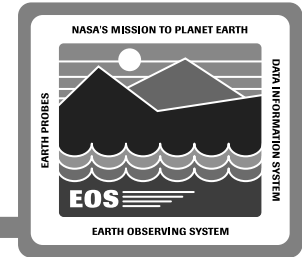# Configuration Management

Ronald A. Jones

18 October 1995

Configuration Management (CM) Description

- **CM is Critical to the implementation of mission operations.**
- **CM reviews, updates and controls Configured Items (CIs).**
- **Spacecraft commands are under CM to ensures verification and validation of each command.**
- **Means to track and control configuration changes to CIs necessitated by changes in spacecraft operations.**
- **CM ensures PDB verification and validation of Telemetry, Commands, Activities and Constraints**
- **Provides a means to track database changes which is used by FOT subsystem engineers to update affected CIs.**
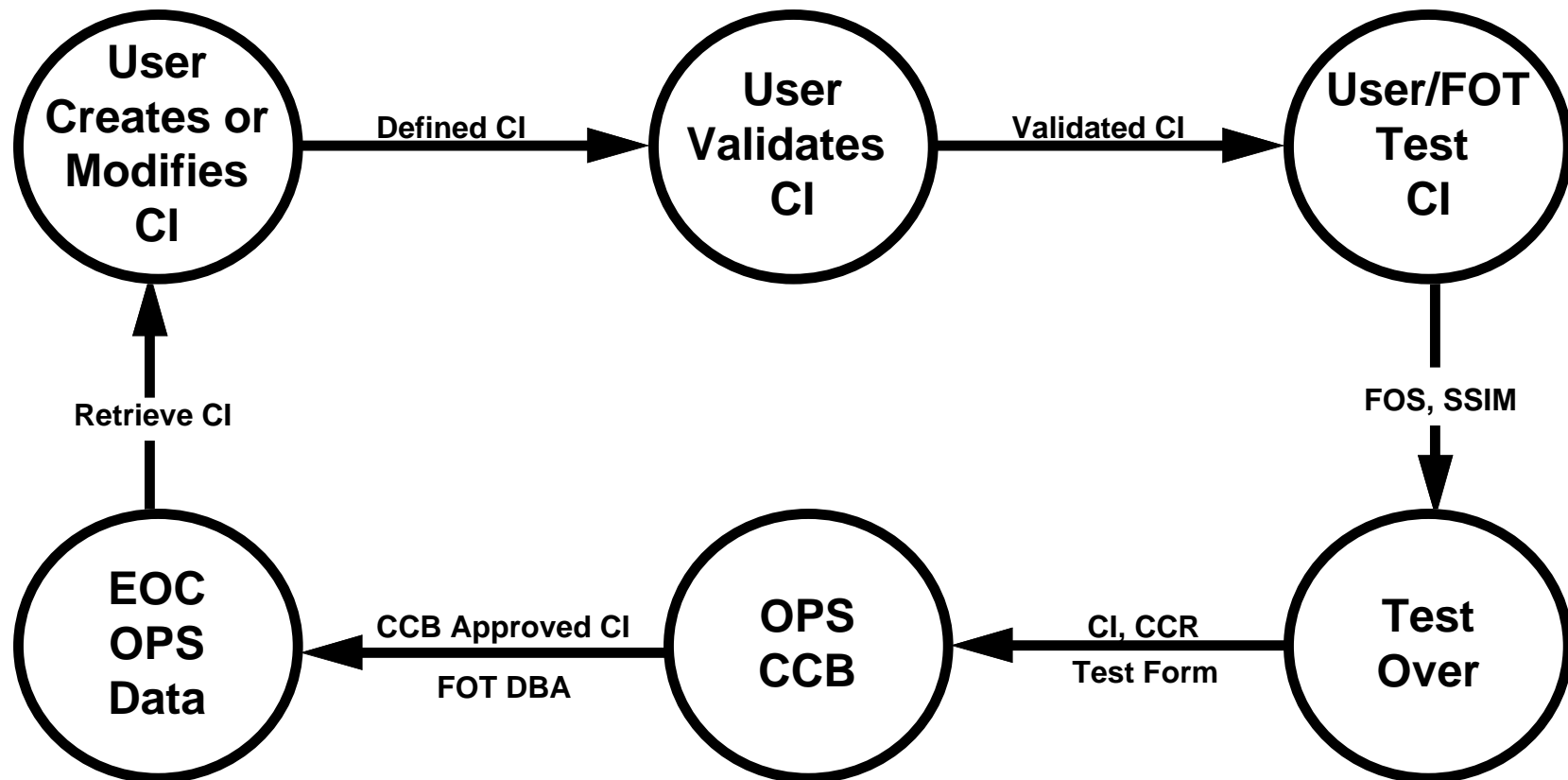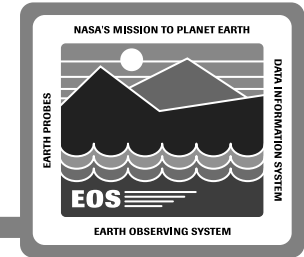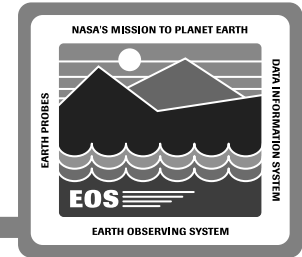
FOS Operational Data

A collection of Data/CI used to support operations at the EOC and managed by the FOT Data Base Administrator (DBA).

- **FOS Database (Sybase Tables)**
  - Project Data Base (PDB)

    CIs: Commands, Telemetry, Activities, Constraints
  - Metadata
  - Operational Data Table (ODT)

    CI: BAP
- **Operational Data File (ODF), UNIX Files**
  - CIs: Command Procedures

    Relative Time Command Sequences

    Pages / Rooms

    Telemetry Monitor

CM Flow Diagram


```
┌──────────────┐              ┌──────────────┐              ┌──────────────┐
│     User     │  Defined CI  │     User     │ Validated CI │   User/FOT   │
│  Creates or  │ ───────────► │   Validates  │ ───────────► │     Test     │
│   Modifies   │              │      CI      │              │      CI      │
│      CI      │              │              │              │              │
└──────────────┘              └──────────────┘              └──────────────┘
       ▲                                                           │
       │ Retrieve CI                                               │ FOS, SSIM
       │                                                           ▼
┌──────────────┐              ┌──────────────┐              ┌──────────────┐
│     EOC      │ CCB Approved │     OPS      │   CI, CCR    │     Test     │
│     OPS      │     CI       │     CCB      │ ◄─────────── │     Over     │
│     Data     │ ◄─────────── │              │  Test Form   │              │
│              │   FOT DBA    │              │              │              │
└──────────────┘              └──────────────┘              └──────────────┘
```
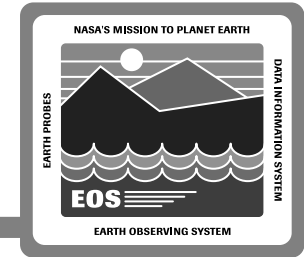
CI Test Checkout

Migration Path

- **User defines CI in their Own Personal Account (IST Workstation / EOC User Station)**

- **User Syntax, Validates / Constraint Checks CI**

- **User Test CI by themselves or in conjunction with FOT**

  - **Against FOS**

    example 1: Page Display

    example 2: Create Activity, Schedule Activity, Display on Timeline, Generate DAS & CMS Loads

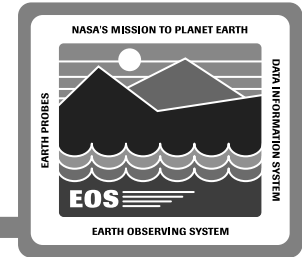 - **Against SSIM (example: Command Procedure)**

- **User Submits CI to FOT CCB for review**

Procedure Editor

Procedure Editor

File	Edit	Tools		Help

Procedure: Fire_Thruster   Type: Command

<<<Procedure Text>>>

Loaded 36 lines (496 bytes) from cmdProcs/Fire_Thruster
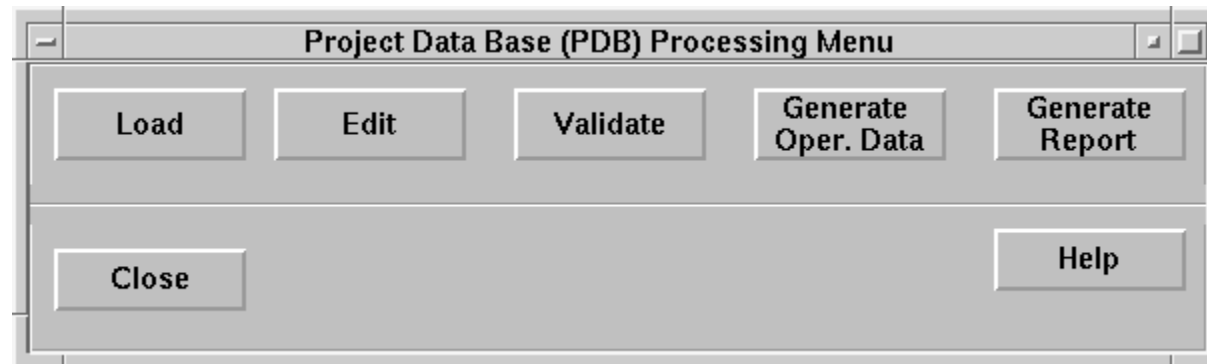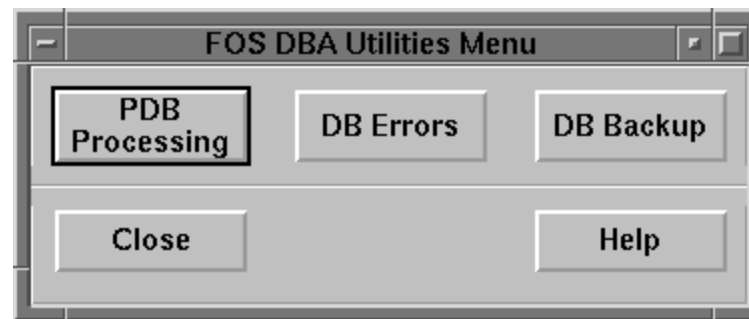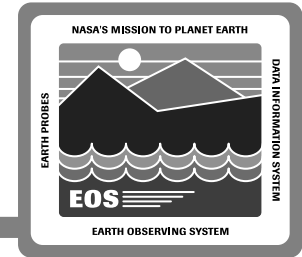
Go To: [   ]   Validate **PASS**   Check Syntax **PASS**

Command Builder

Directive Keywords

<<< List of Keywords >>>

Filter		▣ AM1-MISR
All		☐ AM1-CERES
		☐ AM1-COMMS

Commands

<<< List of Cmd Mnemonics >>>

Parameters

<<< List of Parameters >>>
(analog and discrete)

Qualifiers

<<< List of Qualifiers >>>
(discrete only)
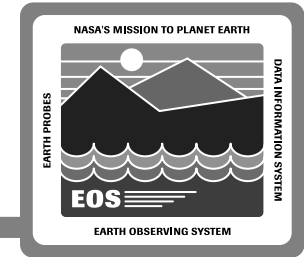
CI Test Checkout (cont.)

- **Approved CIs migrated to EOC Ops Area by the FOT DBA**
  - **Select group of CIs used by the FOT/IOT to fly the mission**
  - **PDB Tools: *FOS DBA Utilities Menu***

    PDB Processing Window
  - **UNIX Files: Use UNIX commands to copy files from FOT DBA CM Directory to appropriate EOC Operations directory.**

FOS DBA Utilities Menu/ PDB Processing Menu

Operations CCB

Author Submits

- **Configured Item Listing (Report)**
- **Operational Configuration Change Request (CCR)**
- **Validation Test Form**

Formal approval of a New or Modified CI requires Four Signatures

- **Author's**
- **NASA Ops Manager Sign Off: Demonstrates that NASA has reviewed the CI, and concurs that its functional implementation is consistent with subsystem engineering design.**
- **FOT Operational Sign Off: Demonstrates that the FOT Operations Lead Engineer has reviewed the CI and that it is consistent with the Ground System and the Operations Plan**
- **FOT System Engineer Sign Off: Demonstrates that the CI is consistent with the current technical subsystem understanding and it's interaction with other spacecraft subsystems.**